



Plastering Work

PLASTERING AND ITS IMPORTANCE

The walls constructed with bricks or stones do not have a fine texture generally. To obtain an even, smooth, regular and clean surface of walls, a covering material like mortar is applied on the surface. The application of mortar is known as plaster. We can say that plaster is a layer of cement-sand-mortar, applied over the masonry work, which also acts as a damp-proof coat over the masonry work. Plastering enhances the appearance of the building. The ceiling is also made smooth with the plaster. It also provides a smooth base for distemper and paint.

Purposes of Plastering

- (i) To get an even, smooth and durable surface.
- (ii) To safeguard the surface from the effects of weathering agencies.
- (iii) To provide a smooth surface for decorative surface finish.
- (iv) To conceal the bad workmanship.

Requirement of an Ideal Plaster

- (i) It should be strong and durable against the effect of weathering agencies.
- (ii) It should offer good resistance against fire.
- (iii) It should give a smooth and washable surface.
- (iv) It should provide a smooth surface with the required decorative effect.

Tools Used in Plastering Work (Fig. 3.1)

- 1. Wooden float or Metal float
- 2. Trowel
- 3. Water pipe
- 4. Measuring tape
- 5. Aluminum hollow box section
- 6. Tacha or Brick axe
- 7. Plumb bob
- 8. Patti for making groove
- 9. Spade
- 10. Mortar pan
- 11. Chisel
- 12. Hammer
- 13. Right angle, small and big
- 14. Screen for sieving sand
- 15. Measuring jar
- 16. Wire brush
- 17. Measuring boxes for measuring sand

Material required for plastering

- (i) Cement
- (ii) Sand
- (iii) Water
- (iv) Admixture (if any), for example, waterproofing compound

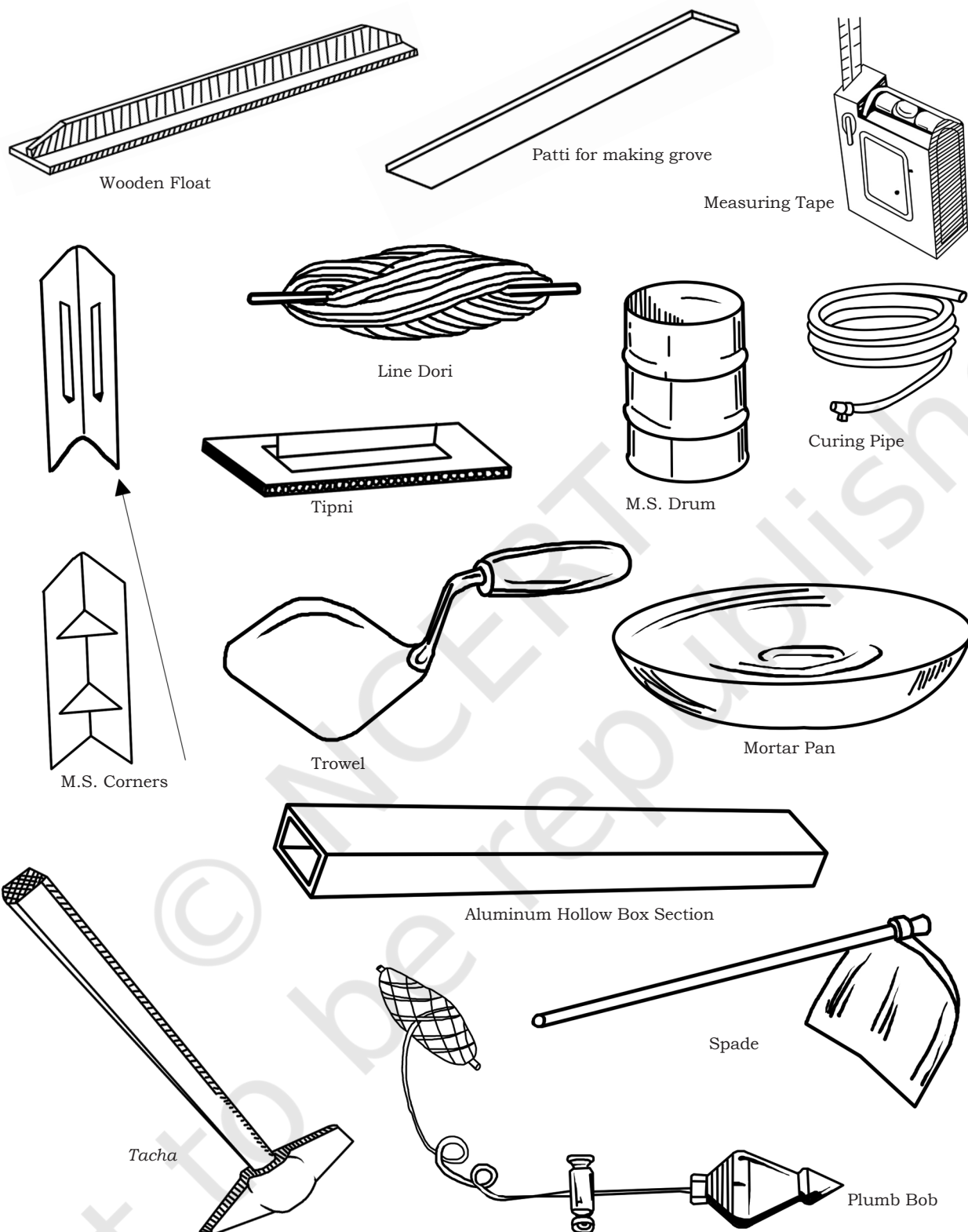
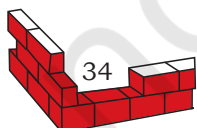


Fig: 3.1: Tools used in plastering work



Types of plaster

- (i) Cement plaster
- (ii) Lime plaster
- (iii) Mud plaster

Cement plaster

The plaster in which cement is used as a binding material is known as cement plaster. Cement and sand is mixed in the proportion from 1:3 to 1:6 with the help of water so that cement plaster can be used smoothly.

Steps to be followed in cement plastering

For coating of internal and external surfaces of a wall, cement plastering is done commonly. Generally cement plastering is done in single coat. For higher thickness more than 15 mm, double coat of cement plastering is done. Sometimes, for very fine finishing, double coating of cement plastering is done. Following steps are followed for doing double coat cement plastering work.

The process of applying a double coat cement plaster on wall surface consists of the following 5 steps.

- (a) Preparation of surface
- (b) preparation for plaster
- (c) first layer of coating of plaster
- (d) second layer of coating of plaster coat (fine finishing coat)
- (e) Curing of finished plaster surface

Procedure for cement plastering

(a) Preparation of surface

1. All the mortar joints of wall should be made rough, so that a good bonding is created for holding plaster.
2. With the help of a wire brush, clean all the joints and surfaces of the wall and check that, oil or



Fig. 3.2: Plastering with machine



Fig. 3.3: Plastering with manual labour

grease etc. are not left on wall surface.

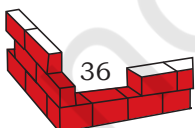
3. When plastering is to be done in old smooth wall or surface then mortar joints should be racked out for at least 12mm depth. This process help better bonding to the plaster.

4. It is necessary to remove the projection etc on the wall, if it is more than 12mm. This will give smooth surface as well reduce the consumption of plaster.
5. Cavities and hole seen in wall should be filled with appropriate material before plastering.
6. Wall should be properly roughened prior to plastering.
7. All the mortar joints and wall should be washed properly and kept wet for six hour prior to cement plastering.

(b) Basic preparation for plaster

1. For getting uniform thickness of plaster in a surface, dot system should be promoted. In this process, a patch of plaster having thickness of 10mm and size of 15×15mm should be fixed horizontally as well as vertically at a distance of 2 meter.
2. With the help of plumb-bob and line dori should be used for horizontal and vertical line of dots.
3. After setting the dots, vertical strip of plaster is placed between the dots. This vertical strip is called as screeds. It helps in maintaining uniform thickness of plaster.
4. Similarly, other walls are plastered in same process.

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5. Use of mason square is made for checking right angle.

(c) *Applying second layer of coating of plaster coat (fine finishing coat)*

1. Generally for second coat, thickness of plaster varies between 2 to 3 mm.
2. The ratio of cement and sand varies between 1:4 to 1:6 for second coat plaster.
3. First coat should be dampened prior to second coat.
4. Similarly with the help of wooden float and steel trowel, finishing coat is made.
5. To avoid joining marks, finishing coat is made from top end of wall to bottom in one operation.

(d) *Curing of finished plaster surface*

After plastering work to achieve strength and hardness surface, plaster wall should be kept wet for 7 days.

(For ceiling plaster work, levels are marked on the wall with level tube and then dots are marked and screeds are filled on the ceiling.)

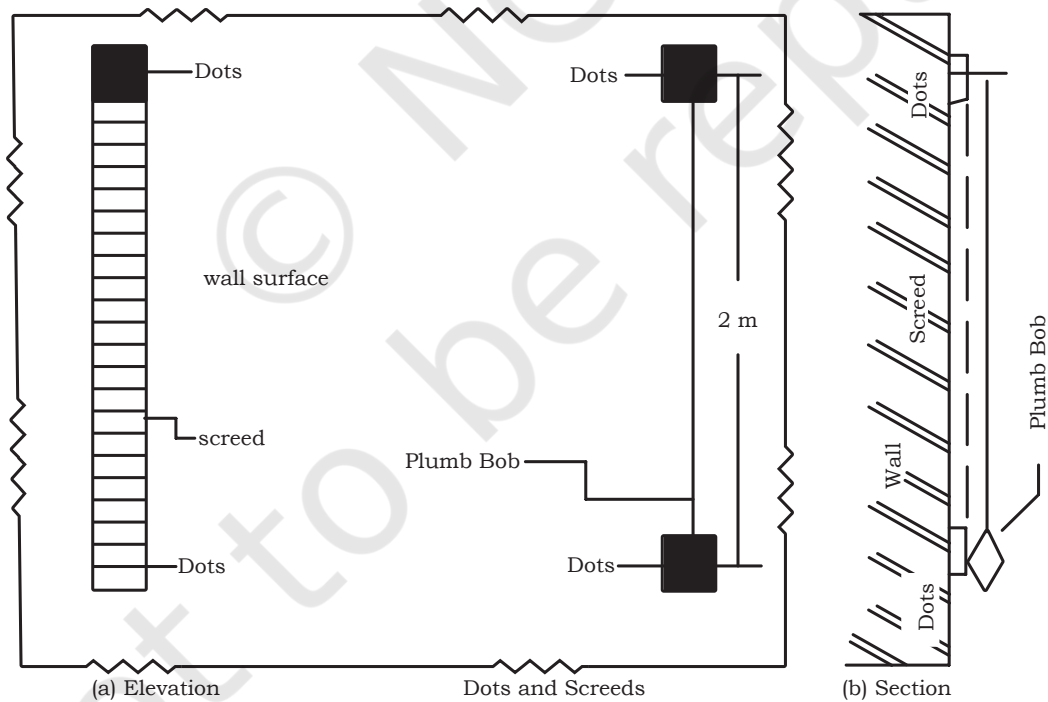


Fig. 3.4: Curing of finished plaster surface

Lime plaster

The proportioning of ingredients in lime mortar is different and adopted according to the number of coats. If one-coat lime plaster is applied, the proportion is kept 1:2 i.e., one part lime and two parts sand. If two coats are applied, the proportion for the first is same but proportion for the second coat is kept 2:1 i.e., two parts lime and one part of sand. In three coats of plaster, the proportion for the third coat is kept 4:1 i.e., four parts of lime and one part of sand. The thickness of the lime plaster varies from 18–25 mm.

Lime plaster is suitable for internal rendering of the building, but it is not common these days.

Steps to be followed in lime plastering

Preparing the surface

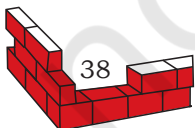
This step of preparing the surface is the same as in the case of cement plastering.

Application of plaster coats

Lime plaster is also applied in one, two or three coats. In the first coat, lime plaster is applied with the help of trowel against wall surfaces between the screeds. The necessity of this coat is to fill all irregularities of the surface. First coat is left to dry for three to four days before applying the second coat.

For the application of the second coat, it is essential to wash the first coat and scratch over it with the edge of a trowel. Lime plaster is then applied with the help of a mason's trowel. The thickness of the thin coat is generally kept between 8–10 mm.

After applying the coat, finished coat is applied. This coat usually consists of fat lime. It is essential to make surface of the second coat perfectly plain, it is rubbed first with a wooden float then with a steel float to polish the surface. It is about 3–6 mm in thickness. It is allowed to dry for two days and then the surface is cured for at least two weeks.



Mud plaster

This type of plastering is suitable to be put on the walls of temporary sheds and low cost countryside buildings.

In the plastering work, the surface of the wall is prepared first as in the case of cement plastering. The plaster is then evenly applied on the wall surfaces and dashed with wooden float. The surface is then damped after 24 hours. The importance of damping is to compact the layer and fill the joints deeply with mud mortar.

After damping, the surface is then polished with a steel trowel. If any small cracks develop, a thin wash of cow dung is given and damping is done again.

External Finishes

It is essential to finish external walls of the building by using suitable material depending upon the desired appearance and degree of maintenance. There are various forms of external finishes. The common types of external finishes are:

- (1) Sand faced finish
- (2) Pebble dash finish
- (3) Rough Cast finish
- (4) Smooth cast finish

Sand faced finish

This is done in two coats. In the first coat, cement mortar of 1:3 to 1:4 is applied on the prepared surfaces of wall. The thickness of the first coat should not exceed 12 mm. After application of the first coat, it should be cured for atleast one week. The first coat should be provided with scratches so that the second coat adheres with the first coat. The second coat is then applied with cement mortar of 1:1 in proportion. The thickness of coat is generally kept between 8 to 10 mm. The sand to be used in the second coat should be perfectly screened to get a uniform finished surface. After completion of the second coat, the surface is kept out for at least 15 days.

Pebble dash finish

In this type of finish, it is essential to make 12 mm thick finishing coat. Then the clean pebbles of 10 to 12 mm size are dashed on the surface of finishing coat, so that the pebbles hold position by the mortar already applied.

Rough cast finish

In this mortar, the cement mixture proportion is kept 1:3 and then coarse grained sand is used. The mortar is applied on the surface of wall and is roughly finished by light movements of the wooden float.

Smooth cast finish

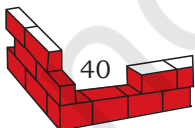
In this finish, the procedure is same as that of rough cast finish, but the sand used is fine grained in place of coarse grained.

Defects of Plastered Surface

1. Sometimes small patches or conical holes (popping) swell out of the plastered surface.
2. Fine hair cracks develop on the plastered surface.
3. If some salt is available in the material of plaster, the salt is brought out to the surface of wall and it appears in the form of whitish crystalline structure. This is called efflorescence and seriously affects the adhesiveness of paint with wall surface.
4. Due to bond failure between successive coats of plaster, the plaster from some portion comes off. This is known as peeling.
5. Due to the thickness of finishing coat or the presence of deliquescent salt, certain paints on plastered surface makes the portion soft.

To minimise the defects in plastered surface, following points should be kept in mind:

- Brick and other material of superior quality should be used.
- Water free from salts should be used.



- The surface should be well watered before plastering.
- The construction should be such that the entry of moisture should be avoided.
- Fresh plastered surface should be saved from the superfluous quality of water.
- Excess trowelling should be avoided.

Repairs to Plastered Surface

The small cracks developed in the plastered surface can be repaired by grouting slurry of cement sand mortar.

For damaged plastered surface, the patches are cut out in square or rectangular shape. The patch is then cleaned and wetted with water. The patch is filled with the plaster of rich ratio (more cement and less sand). The surface is then finished according to the adjacent surface and cured properly.

Efflorescence is removed by rubbing the surface and cleaning it with a brush. Then a solution of water and hydrochloric acid/sulphuric acid in the ratio of 5:1 is applied on the cleaned surface. The surface is then thoroughly washed and rendered clean and dry.

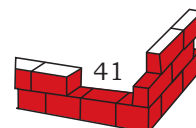
Check Your Progress

A. Answer the following

1. Write the importance of plaster in a building.
2. List the various types of plasters and their suitability.
3. What are the requirements of an ideal plaster?
4. Describe the procedure adopted in plastering of the wall.
5. What precautions should be taken for avoiding plastering defects?
6. What are the purposes of plastering?
7. How the defects of plaster work can be corrected?

B. Fill in the blanks

1. To obtain an even, smooth, regular and clean surface of walls, a covering material like mortar called as _____ is applied on the surface.
2. Material required for plastering are cement, _____, water and admixture (if any).



3. In case of brick masonry, the thickness of first coat plaster is generally _____ mm.
4. Due to bond failure between successive coats of plaster, the plaster from some portion comes off. This is known as _____.
5. Efflorescence is removed by rubbing the surface and cleaning it with a _____.

C. Multiple Choice Questions

1. Plaster made from the following items is known as Cement plaster.

(a) Cement, sand, water	(b) Lime, sand, water
(c) Mud, sand, water	(d) None of these
2. Proportion of lime plaster for first coat is _____.

(a) 1 part lime : 2 parts sand	(b) 1 part lime : 3 parts sand
(c) 1 part lime : 4 parts sand	(d) None of these
3. In pebble dash finish, thickness is kept as _____.

(a) 10 mm	(b) 12mm
(c) 14 mm	(d) 16 mm
4. Mud plaster is done on _____.

(a) temporary sheds	(b) <i>pucca</i> shed
(c) RCC block	(d) None of these
5. Ratio of cement and sand for second coat plaster varies from _____.

(a) 1:2 to 1:3	(b) 1:4 to 1:6
(c) 1:5 to 1:6	(d) None of the above

